Development of an Augmented Reality (AR) Based Computational Numerical Control (CNC) Machine Simulation Teaching Module

Chee Hau, Tan[1], Hwa Jen, Yap[1], Azuddin Mamat[1]

[1] Department of Mechanical Engineering, Faculty of Engineering, University of Malaya; hjyap737@um.edu.my

Conventional presentation slide-based of teaching Computational Numerical Control (CNC) lecture class can be improved by having interactive and interesting teaching and learning environment. This can be done by introducing augmented reality (AR) technology in the lecture classes. The objectives are to raise the students' involvement in learning process, increase the students' motivation and confidence after the class. This research was conducted to prove that AR has positive impact in raising students' involvement in class and increasing their motivation to learn and confident with the knowledge gained. The methodology for this teaching module is to use AR in the simulation technology and integrate the class, lab and workshop together. There were 2 groups of students to be assessed. Group 1 undergoes conventional CNC classes plus AR CNC simulation teaching module while Group 2 undergoes conventional CNC classes only. Questionnaire was conducted to check the students' feelings on the AR CNC teaching module and their motivation. Generally, students from Group 1 have better impression on the CNC classes. They were more active in asking questions and interact with the lecturer and actively competing with classmates in the class to attract lecturer's attention. These had stimulated the motivation of the students to learn as well as the motivation of the lecturer to teach. They felt satisfied and believed in their ability to perform well in applying the CNC knowledge in their career later. AR technology is helpful in raising students' motivation to learn CNC knowledge and making them confident with the knowledge gained.

Key words: Computational Numerical Control (CNC), Augmented Reality, simulation, interactive

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